

Some Cases Illustrating the Safety of Cocaine as an Anæsthetic in Cataract Extractions.

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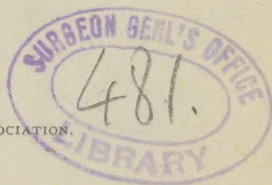
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SOME CASES ILLUSTRATING THE SAFETY OF COCAINE AS AN ANÆSTHETIC IN CATARACT EXTRACTIONS.

During the past year several experienced operators have published cases and experiences that would seem to condemn cocaine as one of the most unsafe anæsthetics to use in the extraction of cataract. Notable among these we may mention the observations of Nettleship, McHardy, and Browne,¹ who have cited their experiences to show that the use of cocaine has a great tendency to produce panophthalmitis in eyes operated on for the extraction of cataract under its influence. Pflüger charges it with producing neuro-paralytic keratitis as a sequel to operations of this kind made under its influence. Dobrowski, in a quite large per cent. of his cases, had prolonged nausea and vomiting follow as a result of using a four per cent. solution. Traumatic keratitis, tardy and imperfect healing of the wound made in the extractions, were noticed also as a complication in his cases, and ascribed to the cocaine. Bunge reports three complications apparently caused by its use in the clinic of Graefe, at Halle. These were: destruction of corneal epithelium; vesicular eruption on the cornea; and parenchymatous corneal opacity. By this opacity it destroyed the eye in some of the cases, and impaired vision seriously in six cases out of a total of 150.² Many other observers have attributed bad results to the action of cocaine.

¹ British Medical Journal, Nov. 21, 1885.

² Ophthalmic Review, Nov., 1885, p. 338.

With a view of contributing to a settlement of the question as to whether any of these results may be fairly charged to the action of cocaine, I have thought it worth while to contribute my experience with it in the extraction of cataract, which I present in the form of a table prepared for me by E. B. Patterson, clerk of the ophthalmic clinic under my charge. (See table on pages 6 and 7.)

A smooth operation was obtained in every case but one (No. 21). In this case a slight escape of vitreous occurred before the iridectomy was completed. The lens was drawn out in its capsule by means of a sharp hook, without further loss of vitreous, and a good result was obtained. $V. = \frac{20}{40}$. There was entire freedom from nausea and vomiting in all the cases in which cocaine was employed as an anæsthetic. Only fresh solutions of cocaine were used.

These constitute all the cases of cataract extraction performed by me at the public clinic from October, 1885, to May, 1886. Although alone insufficient to establish or contradict any of these claimed dangers from the effect of cocaine, they will serve to add to the great mass of statistics by which the questions referred to must ultimately be settled, and which will require the united reports of numerous operators. By reference to the table it will be seen that in thirty-nine extractions made since October 10, 1885, cocaine has been the anæsthetic used in thirty-one of the cases. In thirty of these a four per cent. solution was used. In one case, a feeble lady of 80, a two per cent. solution was substituted. Cocaine failed to act as an anæsthetic in three of the thirty-nine cases, and ether was selected on account of the timidity of the patient in four of the cases. The result was good in thirty-six of the thirty-nine cases, improved in two of the cases, and in the other case, in which the patient died of diabetic coma on the 7th day, the result of the extraction was perfect.

There was no complication whatever as far as the healing process was concerned. The vision was clear at the first opening of the eye, and remained so up to the time of the patient's becoming unconscious, a few hours before her death. The other two cases were congenital cataract, which had been neglected beyond the period which permits of good results. In these cases degenerative changes called for extraction. In one, operated on under cocaine, vision was much improved, and no complication occurred during the healing process. In the other ether had to be resorted to; slight iritis followed the operation. The patient improved, and is still gaining in visual power.

No inflammatory complications occurred in thirty-four of the thirty-nine cases. Iritis occurred in four of the cases, in two of which ether was the anæsthetic used.

In about seven hundred cataract extractions I do not remember so large a number of consecutive cases that presented so great freedom from inflammatory trouble, either of the cornea or deeper structures, though I have had a larger number of consecutive cases in which perfect results were ultimately obtained, and also with better average of vision. Nor have I had so remarkable freedom from nausea and vomiting after the extractions as when ether or chloroform were used, saying nothing of the embarrassment from this cause that so often occurred during the operation when made under these anæsthetics, and which has deterred some operators from resorting to them. By using cocaine we also avoid that agitation of the patient which results from excessive bronchial secretion, so often produced when ether is used. Indeed, in my experience, so often is the patient unpleasantly affected from this action of ether, and the obtaining a smooth operation endangered by it, that I have been in the habit for years of substituting chloroform in all such cases, believing that

No.	Date.	Name and Residence.	Age.	Eye Operat- ed on.	Anæsthetic.	Complication During Healing Process.	Dis- charg'd.	Result.	REMARKS.
1	1885. Oct. 10.	E. F., Fargo, Mich.	28	R	Cocaine, 4 pr. ct.	Oct. 27 a small vesicle which had formed at inner angle of wound was punctured and compress applied; no further trouble.	Nov. 30	Good.	Cataract soft; secondary opera- tion on Nov. 27, by needle. V= 20-30 +.
2	" 10.	E. C., Signet, Ohio.	64	L	"	Had iritis controlled by atro- pine.	Nov. 27	"	Secondary operation upon opaque membrane, needle, Nov. 11. V. = 20-100.
3	" 11.	Thos. McD., Hillsdale, Mich.	68	R	"	None.	Nov. 9	"	V. = 20-40.
4	" 11.	H. S. A., Bay City, Mich.	66	L	"	Slight iritis, controlled by atropine.	Dec. 12	"	Needle operation on capsule. V. = 20-40. Patient has imbedded in iris a particle of steel; has been there 45 years; was not disturbed.
5	" 14.	Kath. McM., Camden, Ont.	65	L	"	None.	Nov. 13	"	Some soft lens matter remains which obstructs vision; is now undergoing absorption. V. = 20-50.
6	" 16.	Jas. L., Medina, Mich.	78	R	"	None.	Nov. 23	"	Some soft lens matter remained. V. = 20-100.
7	" 16.	Mrs. G. F. C., Adrian, Mich.	40	R	Cocaine failed. Ether used.	None.	Nov. 7	"	V. = 20-100.
8	" 31.	G. W. C. Stanton, Mich.	62	L	Ether.	Had iritis on third day; pup- il drawn upward Jan. 13; membrane formed after opera- tion incised and central pup- il made.	Jan. 25, 1886	"	V. = 20-40. Patient lost R. E. from inflammation after cataract extraction last year.
9	Nov. 4.	M. B., Bloomdale, Mich.	59	R	Cocaine, 4 pr. ct.	None.	Dec. 8	"	V. = 20-40.
10	" 4.	E. S. G., Albion, Mich.	68	R	"	None.	Nov. 23	"	V. = 20-40.
11	" 11.	H. J., Wayne Co. House, Mich.	51	L	"	None.	Dec. 14	"	V. = 20-70.
12	" 21.	Mrs. C. R., Allendale, Mich.	57	R	"	None.	Dec. 29	"	Dec. 19 secondary operation (nee- dle). V. = 20-40.
13	" 21.	A. McA., Alpena, Mich.	28	R	Ether.	Had iritis, not severe, but left a membrane.	Dec. 29	"	Patient has had trouble with eyes for several years. L. E. was lost 8 yrs. ago after an operation; R. E. has had two iridectomies; Dec. 19 opaque capsule lacerat- ed, resulting V. = 20-40.
14	Dec. 2.	M. W., Swartz Creek, Mich.	34	R	Cocaine, 4 pr. ct.	None.	Dec. 19	"	Some soft lens matter remains, soft cataract. V. = 20-70 and im- proving.
15	" 2.	E. T., Sherwood, Mich.	53	R	"	None.	Dec. 31	"	V. = 20-20.
16	" 26.	Jas. C., Bowling Green, O.	55	R	Cocaine failed. Ether used.	None.	Jan. 6, 1886	"	V. = 20-40. Cataract had un- dergone degeneration, and was extracted in capsule.
17	" 14.	E. G., Mt. Pleasant, Mich.	54	L	Cocaine, 4 pr. ct.	None.	 1886	"	V. = 20-40.
18	Jan. 14.	O. D., Duplaines, Mich.	63	R	"	None.	Feb. 1	"	V. = 20-40.
19	" 16.	M. F., Battle Creek, Mich.	26	R	"	Died on 7th day from diabe- tic coma; no inflammatory complications of eye.		"	Vision good as determined by usual trial on opening eye. See special reference in summary. V. = 20-40.
20	" 23.	J. A. McO., Stanley, Ohio.	45	R	Cocaine failed. Ether used.	None.	Feb. 13	"	
21	" 20.	J. B., Medina, Mich.	54	L	Cocaine, 4 pr. ct.	None.	Feb. 20	"	Vitreous escaped, lens extracted with sharp hook, resulting V. = 20-40.
22	Feb. 6.	H. A., Schoolcraft, Mich.	70	R	"	None.	Feb. 27	"	V. = 20-70. Has opaque and wrinkled capsule left; can be im- proved by secondary operation.
23	" 27.	P. G., Flint, Mich.	80	L	"	Iritis on 4th day.	April 1	"	V. = 20-200. Secondary opera- tion for membrane left by iritis made Mar. 17—needle.
24	Mar. 6.	E. R., Clayton, Mich.	60	R	"	None.	"	"	V. = 20-70. Cataract over-ma- ture and shrunken.
25	Feb.	D. P.	58	L	"	None.		"	V. = 20-40.
26	Mar. 13.	A. W.	52	R	"	None.	"	"	V. = 20-70. Has opaque and wrinkled capsule, and can be im- proved by secondary operation.
27	" 13.	C. C., Howell, Mich.	56	R	Ether.	None.	"	"	V. = 20-20. Cocaine not tried, as patient was too nervous.
28	" 24.	A. S., Paw Paw, Mich.	75	R	Cocaine, 4 pr. ct.	None.	"	"	V. = 20-70. Slight membrane from capsulitis; April 13 memb. lacerated; April 26 V. = 20-40.
29	" 21.	H. C., Homer, Mich.	67	L	"	None.	"	"	V. = 20-40.
30	April 3.	J. M., Calumet, Mich.	65	R	"	None.	"	"	V. = 20-30.
31	Mar. 31.	E. L., Alpena, Mich.	24	L	"	None.	"	"	V. = 20-40. Soft cataract.
32	April 3.	J. S., Peru, Ind.	70	R	"	None.	April 26	"	Case was complicated by glau- comatous condition. See special reference in summary.
33	" 10.	A. G., Hamilton, Ont.	14	R	Ether.	None, except slight iritis.	"	"	Metamorphosed soft cataract; needle operation made Dec. 9, '85, but as no absorption had ta- ken place it was necessary to ex- tract it.
34	" 14.	J. L. H., Plainwell, Mich.	70	L	Cocaine, 4 pr. ct.	None.	"	"	V. = 20-40 +.
35	" 14.	J. R., Britton, Dakota.	16	L	Ether.	None.	"	"	Degenerated congenital cataract requiring extraction. Patient much improved.
36	" 14.	Mrs. M. A. H., Eaton Rapids, Mich.	80	R	Cocaine, 2 pr. ct.	None.	"	"	V. = 20-70 +.
37	" 14.	N. P., Chatham, Ont.	57	L	" 4 pr. ct.	None.	"	"	V. = 20-30.
38	" 17.	C. S., Fayette, Ohio.	68	R	"	None.	"	"	Test made May 12th. V. = 20-40 +.
39	" 24.	E. F., Fargo, Mich.	28	L	"	None.	"	"	Vision tested May 10; = 20-40.

the increased risk to the life of the patient arising from this substitution is warranted in view of the greater certainty of obtaining a smooth operation, and thus increasing the chances of restoring sight.

From my own experience, I am inclined to regard cocaine as the safest anæsthetic we possess for use in cataract extractions, so far as subsequent complications are concerned. While it may, by its vasomotor constriction, or paralytic action, temporarily diminish the nutrition of the cornea, I believe *that* impairment to be only brief, except in rare cases. I believe it is no more likely to interfere with the healing of the wound in this way, than the general depression arising from the effect of chloroform. From what we, at present, know concerning the action of each of these anæsthetics, it is rational to suppose that there is far less disturbance of the interior circulation of the eye produced by cocaine than by either of the other two, and consequently less liability of panophthalmitis following its use in these operations. So far as its effect to produce shedding of the corneal epithelium is concerned, in most of the cases I have seen reported, antiseptic solutions had also been used, and I am inclined to ascribe this corneal complication to some carelessness in the use of these solutions, rather than to the effect of cocaine. At any rate, it has never been observed by me to follow the use of cocaine when resorted to for this or any other purpose. Solutions of cocaine, when kept for more than a few days, or gelatine tablets containing cocaine (as they are hygroscopic and liable to change), may be attended with danger when used in operations upon the eye.

In reviewing these cases, cases nineteen and thirty-two are worthy of brief special consideration. Case nineteen illustrates how guarded must be our prognosis in all cases of diabetic cataract. This patient had not been aware of her condition, and was made acquainted with it only through the investiga-

tions I insist upon as preliminary to cataract extractions. Among these preliminary examinations I insist upon an analysis of the urine. This has been my custom for many years. For the past few years I have been especially urgent upon this point by reason of an unfortunate result that occurred in a case in which I had neglected it, and was thus unprepared to expect misfortune. A lady about 60 years of age presented herself at my clinic having the appearance of a person in good health, and claimed to be perfectly well. She was blind from senile cataract, both lenses presenting the peculiar amber hue, and there was apparently no complication. She was very urgent for an immediate operation, and presented reasons that induced me to yield to her request, and without waiting for the usual urine analysis I operated, using ether as the anæsthetic. The patient suffered from prolonged nausea and vomiting and seemed not fully to recover from the effect of the anæsthetic, and died of coma about ten days after the operation was performed. The wound had healed nicely and the eye presented no sign of complication. Examination of the urine made during the illness showed both albumen and sugar, and an autopsy revealed that the patient suffered from that somewhat rare combination of Bright's disease and diabetes mellitus. Recognizing the injurious effect of ether in Bright's disease, I blamed myself for administering it in this case without knowing the condition and warning the friends of the increased danger.

In case 19, however, we had the diagnosis clear before the operation. As cocaine relieved us of the constitutional disturbance incident to a general anæsthetic, and the patient was courageous, urgently soliciting the operation, and cheerful during its performance, there was no reason for expecting that the extraction might hasten the fatal issue of the disease. All this was duly considered in my discussion of the

case before the class, and I had also stated the uncertainty of life in any of these cases. I was not, however, prepared to expect a fatal termination of the disease in this case so soon. The result shows us how careful must be our prognosis as to life in such cases, though it should have no effect to deter us from operating when a person is blind from diabetic cataract and presents no evidence of immediate danger from the constitutional disease. If the patient lives but a few weeks, the blessings of sight will be a sufficient reward for all he endures, and with cocaine we may expect to perform the operation on courageous and hopeful patients with no fear of hastening the fatal issue. Neither can cocaine or the operation be charged with the result in this case.

Case 32 illustrates the favorable results that sometimes come from apparently hopeless operations, and shows that cocaine may be used safely even when there is increased tension. He began to notice dimness of sight about three years ago, the sight failing slowly but constantly. There was no pain until about three months preceding his appearance at my clinic. During these three months he has had slight pain in eyes, and headache. The left eye was entirely blind; he could not perceive the brightest light, pupil dilated and would not respond to brightest light, lens opaque and pressing against the cornea, T+2, no pain at present. Right eye perceives bright light, pupil dilated and responds slightly and slowly to bright light, lens opaque and bulging into anterior chamber, which is almost completely obliterated, T+1, no pain at present, a few enlarged anastomosing veins in ciliary region. This patient was told that there was no prospect of a successful operation, but at his urgent request it was undertaken on right eye, thinking it possible to preserve perception of light for awhile longer and perhaps enable him to see large objects. On March 20 a large iridectomy was made, using cocaine as the anæsthetic. The ante-

rior chamber was so nearly obliterated that only by careful use of Graefe's knife could a small incision into the anterior chamber be made, and this had to be enlarged greatly by the scissors to allow a sufficiently large piece of the iris to be seized and excised.

April 3.—The patient has very completely recovered from former operation. Tension normal, and anterior chamber nearly of normal depth. Cocaine was used and lens extracted. Operation smooth, and no after complications occurred.

April 26.—Eye tested, and with $+ \frac{2}{7}$ S. $V = \frac{2.0}{7.0}$ sharp. Ophthalmoscopic examination showed results of serous choroiditis and there was choroidal atrophy about the disc, but no excavation of disc itself. As regards the action of cocaine, the results in these cases would tend to establish the following propositions:

1. Cocaine relieves the operator from the embarrassments during the operation for cataract that arise from vomiting; also from the agitation of his patient which results from excessive bronchial secretion, or stertorous breathing. These are often very troublesome when ether or chloroform is used.

2. The danger to the result which often arises from nausea and vomiting after the extraction, when other anæsthetics are employed, is very surely avoided when cocaine is selected as the anæsthetic agent and is properly used.

3. The danger arising from the depressing effect of cocaine upon the nutrition of the cornea is no greater than in cases where ether or chloroform are used. The depression of the circulation, which often arises from either of them, may affect very injuriously the corneal nutrition.

4. The disturbance of the circulation of the interior of the eye, and consequent danger of panophthalmitis from this cause, is probably less in using cocaine for this operation, than in resorting to general anæsthesia.

5. The danger of sepsis and consequent panophthalmitis from the use of cocaine may be avoided by using only fresh solutions.

